THE COMBINED FILE SEARCH SYSTEM

APTD-1152

OPERATING INSTRUCTIONS

FOR

PB 211 069

AN INFORMATION STORAGE

AND

RETRIEVAL SYSTEM

PREPARED FOR

CONSUMER PROTECTION AND

ENVIRONMENTAL HEALTH SERVICE

BY

THE SERVICE BUREAU CORPORATION

Reproduced by
NATIONAL TECHNICAL
INFORMATION SERVICE
U S Department of Commerce
Springfield VA 22151

JULY 1968

THE COMBINED FILE SEARCH SYSTEM

developed for

THE FOOD AND DRUG ADMINISTRATION

by

THE SERVICE BUREAU CORPORATION

OPERATING INSTRUCTIONS

TABLE OF CONTENTS

INTRODUCTION 1

MACHINE CONFIGURATION 1

SOURCE DECKS 2

CATALOGING THE PROGRAMS 4

PROGRAM EXECUTION 11

DICTIONARY PROGRAMS AND SORTS 12
DICTIONARY VALIDATION 15
FILE MAINTENANCE PROGRAMS AND SORTS 16
MASTER FILE REORGANIZATION 23
DATA CELL INITIALIZATION 24
SEARCH PROGRAM 25

Introduction

The programs listed in this manual comprise the entire information storage and retrieval system as of June 1, 1968. These programs were developed for The Food and Drug Administration by The Service Bureau Corporation. See the Information Storage and Retrieval User's Manual for a detailed description of using this system and the Information Storage and Retrieval Programming Manual for a detailed description of each program and routine in this system.

Machine Configuration

All programs in this system are written in assembly language to operate under the IBM System/360 disk operating system (DOS). This information storage and retrieval system was designed for the following machine configuration:

1. System/360 with 64K of core storage and DOS
2. Console typewriter, card reader, and line printer (132 positions)
3. Five magnetic tape drives
4. Five 2311 disk drives
5. One 2321 data cell drive

This configuration is designed to hold about 500,000 documents. A user with about 5,000 documents may be able to store his master file on a disk and combine the other three disk files onto another disk pack, thus eliminating the data cell and one disk drive.

Programs in the System

There are three types of libraries under DOS: 1) the source statement library, 2) the relocatable library, and 3) the core image library. It is assumed that these libraries will be used in the following recommended deck setups.

Source Decks, Assemble and Catalog

The following source decks plus several IBM supplied I/O logic modules comprise the entire FDA ISR system. First catalog the source statement decks into the source statement library and assemble the other four sets of source decks. Then catalog each of the object decks from the assemblies into the relocatable library using the name given. This can be done as follows:

```
// JOB CATALOG OBJECT DECK
// EXEC MAINT
   CATALR DADIO
   (object deck goes here)
/*
```

1. Source Statement Decks.

a.	RDWT	Generate Linkage to DADIO Routine
b.	RDSK	Read Disk Macro (DADIO)
c.	WDSK	Write Disk Macro (DADIO)
d.	RDCL	Read Data Cell Macro (DADIO)
e.	WDCL	Write Data Cell Macro (DADIO)
f.	LKXXX	Generate Linkage to Look Up Routines
g.	LKDF	Dictionary Look Up Macro (LKDICT)
h.	LKMF	Master File Look Up Macro (LKMAST)
i.	LKIF	Inverted File Look Up Macro (LKIVRT)
j.	LKXF	Cross Reference File Lookup Macro (LKXREF)
k.	PRNT	Print a Line Macro (PLINE)
l.	TYPE	Type a Line Macro (PLINE)
m.	PRNTLC	Initialize Line Control Count Macro (PLINE)
n.	XDMP	Debugging Dump Macro (XDUMP)
o.	XSRT	Core Sort Linkage Macro (XSORT)
p.	SREQU	Search Equates
q.	SRCOM	Search Common Dsect
r.	SRFPT	Search File Pointer Dsect
s.	SRMFR	Search Master File Record Dsect

2. General System Source Decks

a.	DADIO	Direct Access Devices Input/Output Routine
b.	PLINE	Print/Type a Line Routine
c.	XDUMP	Debugging Dump Routine
d.	XSORT	Generalized Core Sort Routine
e.	LKDICT	Dictionary Look Up Routine
f.	LKXREF	Cross Reference Look Up Routine

3. Dictionary System Source Decks

a.	TABBLD	Build File/Context Tables Program
b.	DEDIT	Edit Dictionary Input Program
c.	DICT2	Update Dictionary Tape File Program
d.	DKDICT	Build Dictionary Disk File Routine
e.	DPRINT3	Print Dictionary File Program
f.	DPRINT4	Publish Dictionary File Program
g.	SYNTAPE	Build Synonym Tape Program
h.	DICTMSG	Print Dictionary Update Changes Program
i.	SBRFORM	Print Dictionary Record Routine
j.	RELTERM	Subordinate Term Extractor
k.	RELTRM1	Subordinate Term Validator

4. Master File System Source Decks

a.	MFEDIT	Edit Master File Update Program
b.	DTF1	DTF's for MFEDIT
c.	MFMAINT	Update Master File Program
d.	MFDTFS	DTF's for MFMAINT
e.	PUTR	Build Master File Routine
f.	LKMAST	Master File Look Up Routine
g.	IDUPDATE	Update ID. File Program
h.	IDUDTFS	DTF's for IDUPDATE
i.	MPRINT1	Print Master File Records Program
j.	DTFMPR1	DTF's for MPRINT1
k.	UPDXREF	Update Cross Reference File Tape Program
l.	DKXREF	Build Cross Reference Disk Routine
m.	XREFPRNT	Print Cross Reference Program
n.	IVUPDT	Update Inverted File Tape Program
o.	DKIVRT	Build Inverted File Disk Routine
p.	IFPRNT	Print Inverted File Program
q.	IVPRINT	Print Inverted File Statistics
r.	INITDC	Initialize Master File Program
s.	EDITBC	Edit Block Changes Program
t.	DUMPCELL	Dump Master File Program
u.	LOADCELL	Load Master File Program
v.	DUMPDTF	DTF's for DUMPCELL
w.	LOADDTF	DTF's for LOADCELL
x.	ERRPRINT	Print MFEDIT Errors Routine
y.	MPRINT2	Print ID. File Program
z.	DTFMPR2	DTF's for MPRINT2

5. Search System Source Decks

a.	SEARCH	Main Search and Common Programs
b.	SEDIT	Edit Search Input Routine
c.	DVFPN	Convert to Floating Point Program
d.	SIVRT	Form Inverted File String Routine
e.	LKIVRT	Inverted File Look Up Routine
f.	SFSEQ	Search Master File Record Routine
g.	SMOUT	Output Master File Record Routine
h.	LKMASTS	Master File Look Up Routine for Search

Catalog Programs

All programs executed under DOS must be edited by the linkage editor from the relocatable format to the core image format. Each program after it has been link edited can be stored as a phase in the core image library. This eliminates the need to link edit each program each time it is executed. The following is the recommended deck set up to edit the programs in this system into the core image library.

```
// JOB TABBLD                CATALOG TABLE BUILDER PROGRAM
// OPTION CATAL
   PHASE TABBLD,*
   INCLUDE TABBLD
   INCLUDE IJCFZIZ1
   INCLUDE IJCFZOZ4
   INCLUDE IJDFCPZZ
/*
// EXEC LNKEDT
/*

// JOB DEDIT                 CATALOG DICTIONARY EDIT PROGRAM
// OPTION CATAL
   PHASE DEDIT,*
   INCLUDE DEDIT
   INCLUDE XSORT
   INCLUDE IJDFCPZZ
   INCLUDE IJFFZZWZ
   INCLUDE IJCFZIB0
/*
// EXEC LNKEDT
/*

// JOB DICT2                 CATALOG DICTIONARY UPDATE PROGRAM
// OPTION CATAL
   PHASE DICT2,*
   INCLUDE DICT2
   INCLUDE DKDICT
   INCLUDE DADIO
   INCLUDE PLINE
   INCLUDE IJFFZZZZ
   INCLUDE IJFVZZWZ
   INCLUDE XDUMP
/*
// LBLTYP NSD(01)
// EXEC LNKEDT
/*

// JOB DICTMSG               CATALOG PRINT DICTIONARY UPDATE CHANGES PROGRAM
// OPTION CATAL
   PHASE DICTMSG,*
   INCLUDE DICTMSG
   INCLUDE SBRFORM
   INCLUDE IJDFCZZZ
/*
// EXEC LNKEDT
/*
```

```
// JOB DPRINT3              CATALOG DICTIONARY PRINT PROGRAM
// OPTION CATAL
   PHASE DPRINT3,*
   INCLUDE DPRINT3
   INCLUDE SBRFORM
   INCLUDE XDUMP
   INCLUDE IJCFZIZØ
   INCLUDE IJDFCPZZ
/*
// EXEC LNKEDT
/*

// JOB SYNTAPE              CATALOG BUILD SYNONYMS PROGRAM
// OPTION CATAL
   PHASE SYNTAPE,*
   INCLUDE SYNTAPE
/*
// EXEC LNKEDT
/*

// JOB DPRINT4              CATALOG PUBLISH DICTIONARY PROGRAM
// OPTION CATAL
   PHASE DPRINT4,*
   INCLUDE DPRINT4
   INCLUDE XDUMP
   INCLUDE IJCFZIZØ
/*
// EXEC LNKEDT
/*

// JOB MFEDIT               CATALOG MASTER FILE EDIT PROGRAM
// OPTION CATAL
   PHASE MFEDIT,*
   INCLUDE MFEDIT
   INCLUDE DTF1
   INCLUDE DADIO
   INCLUDE PLINE
   INCLUDE LKDICT
   INCLUDE IJGWENZZ
   INCLUDE IJFFZZWZ
   INCLUDE IJFVZZWZ
   PHASE ERRPRINT,DNG4Ø
   INCLUDE ERRPRINT
/*
// LBLTYP NSD(Ø1)
// EXEC LNKEDT
/*
```

```
// JOB MFMAINT              CATALOG MASTER FILE MAINTENANCE PROGRAM
// OPTION CATAL
   PHASE MFMAINT
   INCLUDE MFDTS
   INCLUDE LKMAST
   INCLUDE PUTR
   INCLUDE DADIO
   INCLUDE PLINE
   INCLUDE IJFFZZWZ
   INCLUDE IJFVZCWZ
   PHASE LKXREF,MREC+4000
   INCLUDE LKXREF
/*
// LBLTYP NSD(10)
// EXEC LNKEDT
/*

// JOB MPRINT1              CATALOG MASTER FILE PRINT PROGRAM
// OPTION CATAL
   PHASE MPRINT1,*
   INCLUDE MPRINT1
   INCLUDE DTFMPR1
   INCLUDE IJDFAZZZ
   INCLUDE IJFVZZZZ
/*
// EXEC LNKEDT
/*

// JOB IDUPDATE             CATALOG ID. FILE UPDATE PROGRAM
// OPTION CATAL
   PHASE IDUPDATE,*
   INCLUDE IDUPDATE
   INCLUDE IDUDTFS
/*
// EXEC LNKEDT
/*

// JOB MPRINT2              CATALOG ID. FILE PRINT PROGRAM
// OPTION MPRINT2,*
   INCLUDE MPRINT2
   INCLUDE DTFMPR2
   INCLUDE IJDFAZZZ
   INCLUDE IJFVZZZZ
/*
// EXEC LNKEDT
/*
```

```
// JOB UPDXREF                CATALOG CROSS REFERENCE PROGRAM
// OPTION CATAL
   PHASE UPDXREF,*
   INCLUDE UPDXREF
   INCLUDE DKXREF
   INCLUDE DADIO
   INCLUDE PLINE
   INCLUDE IJDFCPZZ
   INCLUDE IJFFZZWZ
/*
// LBLTYP NSD(Ø1)
// EXEC LNKEDT
/*

// JOB XREFPRNT               CATALOG CROSS REFERENCE PRINT PROGRAM
// OPTION CATAL
   PHASE XREFPRNT,*
   INCLUDE XREFPRNT
   INCLUDE IJFFZZWZ
/*
// EXEC LNKEDT
/*

// JOB IVUPDT                 CATALOG INVERTED FILE UPDATE PROGRAM
// OPTION CATAL
   PHASE IVUPDT,*
   INCLUDE IVUPDT
   INCLUDE DKIVRT
   INCLUDE DADIO
   INCLUDE IJFFZZZZ
   INCLUDE IJFVZZWZ
/*
// LBLTYP NSD(Ø1)
// EXEC LNKEDT
/*

// JOB IFPRNT                 CATALOG INVERTED FILE PRINT PROGRAM
// OPTION CATAL
   PHASE IFPRNT,*
   INCLUDE IFPRNT
   INCLUDE XDUMP
   INCLUDE IJFVZZWZ
/*
// EXEC LNKEDT
/*

// JOB IVPRINT                CATALOG INVERTED FILE STATISTICS PROGRAM
// OPTION CATAL
   PHASE IVPRINT,*
   INCLUDE IVPRINT
/*
// EXEC LNKEDT
/*
```

```
// JOB DUMPCELL            CATALOG DUMP MASTER FILE ON TAPE PROGRAM
// OPTION CATAL
   PHASE DUMPCELL,*
   INCLUDE DADIO
   INCLUDE EDITBC
   INCLUDE IJCFZIZØ
   INCLUDE LKDICT
   PHASE DUMPC2,STRPDR+8ØØØ
   INCLUDE DUMPCELL
   INCLUDE DUMPDTF
   INCLUDE LKMAST
   INCLUDE PLINE
   INCLUDE IJFFZZWZ
   INCLUDE IJFVZCWZ
/*
// LBLTYP NSD(1Ø)
// EXEC LNKEDT
/*

// JOB LOADCELL            CATALOG LOAD MASTER FILE FROM TAPE PROGRAM
// OPTION CATAL
   PHASE LOADCELL,*
   INCLUDE LOADCELL
   INCLUDE LOADDTF
   INCLUDE LKMAST
   INCLUDE PUTR
   INCLUDE DADIO
   INCLUDE PLINE
   INCLUDE IJFFZZWZ
   INCLUDE IJFVZCWZ
   INCLUDE IJDFAZZZ
/*
// LBLTYP NSD(1Ø)
// EXEC LNKEDT
/*

// JOB INITDC              CATALOG INITIALIZE MASTER FILE PROGRAM
// OPTION CATAL
   PHASE INITDC,*
   INCLUDE INITDC
   INCLUDE DADIO
   INCLUDE PLINE
   INCLUDE DKXREF
/*
// LBLTYP NSD(1Ø)
// EXEC LNKEDT
/*
```

```
// JOB SEARCH                CATALOG SEARCH PROGRAM
// OPTION CATAL
   PHASE PHSRCH,ROOT,NOAUTO
   INCLUDE SRMAIN
   INCLUDE LKDICT
   INCLUDE PLINE
   PHASE PHEDIT,*,NOAUTO
   INCLUDE SREDIT
   INCLUDE LKDICT
   INCLUDE CVFPN1
   INCLUDE XSORT
   INCLUDE IJCFZIZØ
   INCLUDE LKXREF
   PHASE PHIVRT,PHEDIT,NOAUTO
   INCLUDE SRIVRT
   INCLUDE LKIVRT
   PHASE PHFSEQ,PHEDIT,NOAUTO
   INCLUDE SRFSEQ
   INCLUDE SRMOUT
   INCLUDE LKMASTS
   INCLUDE IJFVZCWZ
/*
// LBLTYP NSD(1Ø)
// EXEC LNKEDT
/*
```

Operating Deck Setup

The following deck setup illustrates the execution of the FDA ISR system. Various job control cards may have to be revised to meet existing file sizes and hardware configurations. The dictionary file should be built and checked for errors before any documents are put into the master file. As soon as the master file is updated (MFEDIT and MFMAINT), the identification file must be updated (MPRINT1, SORT, IDUPDATE), the cross reference file must be updated (SORT, UPDXREF) and the inverted file must be updated (SORT, IVUPDT). The master file system and the search will not function properly if these files are not kept in phase with each other. Periodically the master file should be dumped onto a back up tape using the dump cell program (DUMPCELL).

```
// JOB DEDIT
* OPERATOR--MOUNT SCRATCH TAPES ON SYSØØ5(18Ø) AND SYSØØ6(181)
*           MOUNT INPUT TAPE ON SYSØØ4(184) IF INPUT IS ON TAPE
// PAUSE WHEN SET UP COMPLETED, PRESS EOB TO CONTINUE
// ASSGN SYSØØ4,X'184' INPUT TAPE
// ASSGN SYSØØ5,X'18Ø' EDITED OUTPUT TAPE
// ASSGN SYSØØ6,X'181'
// MTC REW,SYSØØ5
// MTC WTM.SYSØØ5,Ø3
// MTC REW,SYSØØ5
// EXEC DEDIT
        (INSERT DICTIONARY MAINTENANCE DATA HERE)
/&
* OPERATOR--IF INPUT WAS ON TAPE IN RUN 1 SAVE TAPE ON SYSØØ4(184)
// JOB SORT
// ASSGN SYSØØ1,X'181'
* IF OVERLAP ON UNEXPIRED FILE OCCURS ON FILEW, ENTER DELETE AND EOB
// ASSGN SYSØØ2,X'18Ø'
// ASSGN SYSØ11,X'191'
// ASSGN SYSØ12,X'192'
// ASSGN SYSØ13,X'29Ø'
// ASSGN SYSØ14,X'291'
// VOL SYSØ11,FILEW
// DLAB 'DISK FILE                                    1FDAWRK;        C
               ØØØ1,66ØØ1,66ØØ1,'              ',DA
// XTENT 1,Ø,ØØØØØ1ØØØ,ØØØ199ØØ9,'FDAWRK',SYSØ11
// XTENT 1,1,ØØØØØ1ØØØ,ØØØ199ØØ9,'FDAWRK',SYSØ12
// XTENT 1,2,ØØØØØ1ØØØ,ØØØ199ØØ9,'FDAWRK',SYSØ13
// XTENT 1,3,ØØØØØ1ØØØ,ØØØ199ØØ9,'FDAWRK',SYSØ14
// EXEC DSORT
 SORT FIELDS=(1,1,A,3,64,A.135.1.A.132,3,A)                          C
              FORMAT=BI,FILES=1,SIZE=7ØØ
 RECORD TYPE=F,LENGTH=(185,,185)
 INPFIL INPUT-T,BLKSIZE-(185Ø,X)
 OUTFIL BLKSIZE=185Ø,OUTPUT=T
 OPTION LABEL=(U,U),PRINT
 END
/*
/&
```

```
// JOB DICT2 DICTIONARY MAINTENANCE PROGRAM
*           MOUNT PRIOR DICTIONARY TAPE ON SYSØØ7(182)
*           MOUNT SCRATCHES ON SYSØØ8(183) AND SYSØØ9(184)
*           LEAVE OTHER TAPES WHERE THEY ARE
// PAUSE
// OPTION DUMP
// ASSGN SYSØØ6,X'181' SORTED INPUT TAPE
// ASSGN SYSØØ7,X'182' PRIOR DICTIONARY FILE
// ASSGN SYSØØ8,X'183' CHANGES OUTPUT TAPE
// ASSGN SYSØØ9,X'184' UPDATED DICTIONARY FILE
// MTC REW,SYSØØ6
// MTC REW,SYSØØ7
// MTC REW,SYSØØ8
// MTC REW,SYSØØ9
// UPSI 1ØØØØØØØ USED ONLY IF NO DISK WRITTEN
// MTC WTM,SYSØØ7,Ø3 ONLY FOR FIRST RUN (DUMMY PRIOR FILE)
// MTC REW,SYSØØ7
// ASSGN SYSØ1Ø,X'192'
// VOL SYSØ1Ø,SYSØ1Ø
// DLAB 'FDA DICTIONARY FILE                    IFDADCT;        C
            ØØØ1,68127,6815Ø,'            ',DA
// XTENT 1,Ø,ØØØØØØØØ1,ØØØ151ØØ9,'FDADCT',SYSØ1Ø
// EXEC DICT2
/&
// JOB DICTMSG
// OPTION DUMP
// ASSGN SYSØØ8,X'183'
// ASSGN SYSØ21,X'ØØE' PRINTER
// UPSI 11111111
// MTC REW,SYSØØ8
// EXEC DICTMSG
/&
// JOB SYNTAPE
// ASSGN SYSØØ7,X'182' DICTIONARY TAPE
// ASSGN SYSØØ8,X'183' SYNONYM OUTPUT TAPE
* OPERATOR--UPDATED DICTIONARY WILL BE ON SYSØØ9(184)
*           FILE PROTECT TAPE ON SYSØØ9(184) AND LABEL AS FOLLOWS.
*     1-DICTIONARY NAME
*     2-DATE GENERATED
*     3-NO. OF TRACKS,
*     4-REEL...OF...
*     AGENCY
*          MOUNT TAPE FROM SYSØØ9(184) TO SYSØØ7(182)
*        MAKE TAPE ON SYSØØ6(181) READY
// PAUSE
// EXEC SYNTAPE
/&
```

```
// JOB SORT     SORT SYNONYM TAPE PRIOR TO RUNNING DPRINT4
// ASSGN SYSØØ1,X'181'
// ASSGN SYSØØ2,X'183'
// ASSGN SYSØ11,X'191'
// VOL SYSØ11,FILEW
// DLAB 'DISK FILE                                          IFDAWRK',      C
               ØØØ1,66ØØ1,66ØØ1,'ABCDEFGHIJKLM',DA
// XTENT 1,Ø,ØØØØØ13ØØ,ØØØ198ØØ9,'FDAWRK',SYSØ11
* IF OVERLAP ON UNEXPIRED FILE OCCURS ON FILEW, ENTER DELETE AND EOB
// EXEC DSORT
 SORT FIELDS=(1,13Ø,A)
              FORMAT=BI,FILES=1,SIZE=7ØØ
 RECORD TYPE=F,LENGTH=(13Ø,,13Ø)
 INPFIL INPUT=T,BLKSIZE=(13ØØ,X)
 OUTFIL BLKSIZE=13ØØ,OUTPUT=T
 OPTION LABEL=(U,U), PRINT
END
/*
/&
// JOB DPRINT4
// OPTION DUMP
// ASSGN SYSØØ6,X'181' SORTED SYNONYM INPUT TAPE
// ASSGN SYSØØ7,X'182' DICTIONARY TAPE
// ASSGN SYSØØ8,X'183' WORK FILE TAPE
// ASSGN SYSØ21,X'ØØE' PRINTER
* OPERATOR--MAKE SYSØØ6(181) AND SYSØØ7(182) AND SYSØØ8(183) READY
*      CONTROL CARDS READ THROUGH SYSRDR
*      MOUNT SPECIAL CARRIAGE TAPE FOR DPRINT4
// PAUSE  WHEN SET UP COMPLETED, PRESS EOB TO CONTINUE
// EXEC DPRINT4
COPY / WORKING
DUMP / RECORD
LIST / ALL
/*
/&
*    REPLACE SPECIAL CARRIAGE TAPE WITH STANDARD CARRIAGE TAPE
// JOB DPRINT3
// ASSGN SYSØØ7,X'182' DICTIONARY FILE TAPE
// ASSGN SYSØ21,X'ØØE' PRINTER
* OPERATOR--MAKE SYSØØ7(182) READY
*      DICTIONARY TAPE ON SYSØØ7
*      CONTROL CARDS READ THROUGH SYSRDR
// PAUSE WHEN SET UP COMPLETED, PRESS EOB TO CONTINUE
// EXEC DPRINT3
DUMP / RECORD
/*
/&
* OPERATOR--RETURN PRIOR DICTIONARY AND NEW DICTIONARY TO LIBRARY
// PAUSE END OF DICTIONARY UPDATING RUN
```

The following programs are for internal dictionary validation. Since they will not be run frequently, entries in the core image library would not appear advantageous. For this reason they may be loaded in the relocatable library and link edited prior to each run.

```
// JOB RELTERM EXTRACTION MODULE
// OPTION LINK,DUMP
// ASSGN SYSØØ7,X'182' DICTIONARY TAPE
// ASSGN SYSØØ5,X'184' OUTPUT TAPE
// UPSI ØØØØØ111        EXTRACT RT,SA AND USE TERMS
   INCLUDE RELTERM
/*
// EXEC LNKEDT
// EXEC
/*
*  SORT RELTERM OUTPUT
// ASSGN SYSØØ3,X'191' DISK WORK AREA
// ASSGN SYSØØ2,X'184' SORT INPUT
// ASSGN SYSØØ1,X'181' SORTED OUTPUT
// DLAB 'SORT FDA RELT RECORDS                                  1111111',    C
               ØØØ1,66ØØ1,66ØØ1,66365,'SYSTEM CODE 1',DA
// XTENT 1,Ø,ØØØ17ØØØØ,ØØØ189ØØ9,'111111',SYSØØ3
// EXEC DSORT
 SORT FIELDS=(2,64,A),
               FORMAT=BI,FILES=1,SIZE=14ØØ
 RECORD TYPE=F,LENGTH=(13Ø,,13Ø)
 INPFIL INPUT=T,BLKSIZE=(351Ø,X)
 OUTFIL BLKSIZE=351Ø,OUTPUT=T
 OPTION LABEL=(U,U),PRINT
 END
/*
// JOB RELTRM1 VALIDATE MODULE
// OPTION LINK,DUMP
// ASSGN SYSØØ4,X'183' ERROR TAPE
// ASSGN SYSØØ5,X'181' TEST TAPE SORTED
// ASSGN SYSØØ7,X'182' DICTIONARY TAPE
   INCLUDE RELTRM1
   INCLUDE IJFFBCWZ
/*
// EXEC LNKEDT
// EXEC
/*
/&
```

The following programs are for file maintenance. The order in which they are run will ensure internal continuity throughout the combined file system.

```
* ********************************************
*      FILE MAINTENANCE EDIT - RUN 1
* ********************************************
*    1-MOUNT SCRATCH TAPES ON
*                              SYSØØ4 - UNIT 18Ø
*                              SYSØØ6 - UNIT 182
*                              SYSØØ7 - UNIT 183
*                              SYSØØ8 - UNIT 184
*    2-MOUNT DISKS AS FOLLOWS
*                              DICTIONARY ON SYSØ1Ø - UNIT 192
*                              XREF  FILE ON SYSØ18 - UNIT 29Ø
*                              INV.  FILE ON SYSØ14 - UNIT 291
*    3-MOUNT DATA CELLS AS FOLLOWS
*                              FIRST CELL - MOUNT AT POSITION Ø
*                              2ND.  CELL - MOUNT AT POSITION 1
*                              . . . . . .
*                              . . . . . .
*                              1Ø TH CELL - MOUNT AT POSITION 9
*    4-INPUT DATA
*                  IF ON TAPE, MOUNT ON SYSØØ5 - UNIT 181
*                  IF ON CARDS, PLACE DATA IN CARD READER
// PAUSE WHEN SET UP IS COMPLETE, PRESS EOB TO CONTINUE.

// JOB MFEDIT  MASTER FILE EDIT PROGRAM
// ASSGN SYSØØ4,X'18Ø' EDITED MASTER FILE INPUT
// ASSGN SYSØØ5,X'181' INPUT (TAPE INPUT)
// ASSGN SYSØØ7,X'183' SCRATCH
// ASSGN SYSØ1Ø,X'192' DICTIONARY DISK
// VOL SYSØ1Ø,SYSØ1Ø
// DLAB ' FDA DICTIONARY FILE                          1FDADCT',      X
               ØØØ1,68127,6815Ø,'            ',DA
// XTENT 1,Ø,ØØØØØØØØØ1,ØØØ152ØØ9,'FDADCT',SYSØ1Ø
// EXEC MFEDIT
       (DATA CARDS GO HERE)
/*
```

```
// JOB MFMAINT MASTER FILE UPDATE PROGRAM
// ASSGN SYSØØ4,X'18Ø' EDITED MASTER FILE UPDATE INPUT
// ASSGN SYSØØ5,X'181' UNSORTED INVERTED FILE INPUT
// ASSGN SYSØØ6,X'182' MFMAINT PRINT TAPE
// ASSGN SYSØØ7,X'183' ID. FILE ADDS
// ASSGN SYSØØ8,X'184' UNSORTED CROSS REFERENCE INPUT
// ASSGN SYSØ18,X'29Ø' CROSS REFERENCE FILE DISK
// VOL SYSØ18,SYSØ18
// DLAB 'FDA CROSS REFERENCE FILE                    1FDAXRF',      X
               ØØØ1,68ØØ1,68ØØ1,'              ',DA
// XTENT 1,Ø,ØØØØØØØ1,ØØØØ41ØØ9,'FDAXRF',SYSØ18
// ASSGN SYSØ31,X'293'           MASTER FILE (DATA CELL)
// VOL SYSØ31,SYSØ31
// DLAB 'FDA MASTER FILE                             1FDA1Ø5',      X
              ØØØ1,68127,6815Ø,'            ',DA
// XTENT 1,Ø,ØØØØØØ1ØØ,Ø18ØØ94Ø9,'FDA1Ø5',SYSØ31
// ASSGN SYSØØ9,X'191' WORK FILE DISK
// VOL SYSØØ9,FILEW
// DLAB 'WORK FILE FOR TEXT SEGMENTS                 1FDAWRK',      X
             ØØØ1,66ØØ1,66ØØ1,'              ',SD
// XTENT 1,Ø,ØØØ1ØØØØ,ØØØØ4ØØØ9,'FDAWRK',SYSØØ9

* ************************************************
      MASTER FILE UPDATE - RUN 2
* ************************************************
*    1-FILE PROTECT TAPE ON SYSØØ4 - UNIT 18Ø AND LABEL -
*                                              'EDITED MFINPUT'
*    2-IF INPUT TO RUN 1 WAS ON TAPE, SAVE SYSØØ5 - UNIT 181
*    3-MOUNT SCRATCH TAPE ON SYSØØ5 - UNIT 181
*    4-CHECK TO SEE THAT DATA CELL IS IN READY STATUS
// PAUSE WHEN SET UP COMPLETE, PRESS EOB TO CONTINUE
// EXEC MFMAINT
/*

// JOB MPRINT1  MASTER FILE PRINT PROGRAM
// ASSGN SYSØØ4,X'18Ø' SCRATCH
// ASSGN SYSØØ5,X'181' SCRATCH
// ASSGN SYSØØ6,X'182' MFMAINT PRINT TAPE
// ASSGN SYSØØ7,X'183' SCRATCH
// ASSGN SYSØØ8,X'184' UNSORTED ID. FILE REV.
```

```
* ***************************************************
*      PRINT MASTER FILE CHANGES - RUN 3
* ***************************************************
*    1-SAVE TAPE ON SYSØØ4 - UNIT 18Ø
*    2-SAVE TAPE ON SYSØØ5 - UNIT 181 AND LABEL 'UNSORTED IFINPUT'
*    3-SAVE TAPE ON SYSØØ7 - UNIT 183 AND LABEL 'IDFILE ADDS'
*    4-SAVE TAPE ON SYSØØ8 - UNIT 184 AND LABEL 'UNSORTED XREF INPUT'
*    5-MOUNT SCRATCH TAPES ON
*                              SYSØØ4 - UNIT 18Ø
*                              SYSØØ5 - UNIT 181
*                              SYSØØ7 - UNIT 183
*                              SYSØØ8 - UNIT 184
// PAUSE WHEN SET UP COMPLETE, PRESS EOB TO CONTINUE
// EXEC MPRINT1
/*

// JOB SORT ID FILE REVISIONS

* ***************************************************
*      SORT ID FILE REVISIONS - RUN 4
* ***************************************************
*    1-INPUT IS ON SYSØØ8 - UNIT 184
*    2-OUTPUT IS ON SYSØØ4 - UNIT 18Ø
*    3-SAVE TAPE ON SYSØØ6 - UNIT 182 AND LABEL 'MFMAINT PRINT TAPE'
// ASSGN SYSØØ1,X'18Ø' SORTED ID FILE REV
// ASSGN SYSØØ2,X'184' UNSORTED ID FILE REV
// ASSGN SYSØ11,X'191'
// VOL SYSØ11,FILEW
// DLAB 'DISK FILE                                    1FDAWRK',      C
               ØØØ1,66ØØ1,66ØØ1,'                ',DA
// XTENT 1,Ø,ØØØØØ1ØØØ,ØØØ199ØØ9,'FDAWRK',SYSØ11
 SORT FIELDS=(8,3,A),FORMAT=BI,FILES=1,SIZE=2ØØØ
 RECORD TYPE=V,LENGTH=(12ØØØ,,12ØØØ,5Ø,4ØØ)
 INPFIL BLKSIZE=(12ØØØ),INPUT=T,OPEN=RWD,CLOSE=UNLD
 OUTFIL BLKSIZE=12ØØØ,OPEN=RWD,OUTPUT=T
 OPTION LABEL=(U,U)
 END
/*
/&
// JOB IDUPDATE  ID.FILE UPDATE PROGRAM
// ASSGN SYSØØ4,X'18Ø' SORTED REV
// ASSGN SYSØØ5,X'181' PRIOR ID. FILE
// ASSGN SYSØØ6,X'182' PRINT TAPE
// ASSGN SYSØØ7,X'183' ID. FILE ADDS
// ASSGN SYSØØ8,X'184' UPDATED ID. FILE
```

```
* ***********************************************
*       ID FILE UPDATE - RUN 5
* ***********************************************
*     1-MOUNT PRIOR ID FILE ON SYSØØ5 - UNIT 181
*     2-MOUNT SCRATCH TAPE ON SYSØØ6 - UNIT 182
*     3-MOUNT 'IDFILE ADDS' FROM RUN 2 ON SYSØØ7 - UNIT 183
*     4-SAVE  TAPE ON SYSØØ8 - UNIT 184 AND LABEL 'UNSORTED IF FILE REV'
*     5-MOUNT SCRATCH TAPE ON SYSØØ8 - UNIT 184
// PAUSE WHEN SET UP COMPLETE, PRESS EOB TO CONTINUE
// EXEC IDUPDATE
/*

// JOB MPRINT2  ID. FILE PRINT PROGRAM
// ASSGN SYSØØ4,X'18Ø' SCRATCH
// ASSGN SYSØØ5,X'181' SCRATCH
// ASSGN SYSØØ6,X'182' IDUPDATE PRINT TAPE
// ASSGN SYSØØ7,X'183' SCRATCH
// ASSGN SYSØØ8,X'184' UPDATED ID. FILE

* ***************************************************
*       PRINT ID FILE CHANGES - RUN 6
* ***************************************************
*     1-SAVE  TAPE ON SYSØØ5 - UNIT 181 (PRIOR ID FILE)
*     2-MOUNT SCRATCH TAPE ON SYSØØ5 - UNIT 181
*     3-SAVE  TAPE ON SYSØØ7 - UNIT 183
*     4-MOUNT SCRATCH TAPE ON SYSØØ7 - UNIT 183
*     5-SAVE  TAPE ON SYSØØ8 - UNIT 184 (UPDATED ID. FILE)
*     6-MOUNT SCRATCH TAPE ON SYSØØ8 - UNIT 184
// PAUSE WHEN SET UP COMPLETE, PRESS EOB CONTINUE
// EXEC MPRINT2
/*
```

```
// JOB DSORT SORT CROSS REFERENCE INPUT

* ********************************************************
*     SORT X-REF FILE INPUT - RUN 7
* ********************************************************
*     1-MOUNT 'UNSORTED XREF INPUT' ON SYSØØ8 - UNIT 184
*     2-SORT OUTPUT ON SYSØØ4 - UNIT 18Ø
// PAUSE WHEN SET UP COMPLETE, PRESS EOB CONTINUE
// ASSGN SYSØØ1,X'18Ø' SORTED X-REF INPUT
// ASSGN SYSØØ2,X'184' UNSORTED X-REF INPUT
// ASSGN SYSØ11,X'191'
// VOL SYSØ11,FILEW
// DLAB 'DISK FILE                                    1FDAWRK',      C
               ØØØ1,66ØØ1,66ØØ1,'              ',DA
// XTENT 1,Ø,,ØØØ1ØØØ,ØØØ199ØØ9,'FDAWRK',SYSØ11
// EXEC DSORT
 SORT FIELDS=(1,13,A),FORMAT=BI,FILES=1,SIZE=2ØØØ
 RECORD TYPE=F,LENGTH=(13,,13)
 INPFIL BLKSIZE=(13ØØ,X),INPUT=T,OPEN=RWD,CLOSE=UNLD
 OUTFIL BLKSIZE=13ØØ,OPEN=RWD,OUTPUT=T
 OPTION LABEL=(U,U)
 END
/*
/&

// JOB UPDXREF  X-REF FILE UPDATE PROGRAM
// ASSGN SYSØØ4,X'18Ø' SORTED X-REF INPUT
// ASSGN SYSØØ7,X'183' PRIOR X-REF FILE
// ASSGN SYSØØ8,X'184' UPDATED X-REF FILE
// ASSGN SYSØ18,X'29Ø' X-REF FILE DISK
// VOL SYSØ18,SYSØ18
// DLAB 'FDA CROSS REFERENCE FILE                     1FDAXRF',      X
               ØØØ1,68127,6815Ø,'              ',DA
// XTENT 1,Ø,ØØØØØØØØ1,ØØØØ41ØØ9,'FDAXRF',SYSØ18

* ********************************************************
*      UPDATE X-REF FILE - RUN 8
* ********************************************************
*     1-MOUNT PRIOR X-REF FILE ON SYSØØ7 - UNIT 183
*     2-MOUNT SCRATCH TAPE ON SYSØØ8 - UNIT 184
*     3-CHECK TO SEE THAT X-REF DISK ON SYSØ18 - UNIT 29Ø IS READY
// PAUSE WHEN SET UP COMPLETED, PRESS EOB TO CONTINUE
// EXEC UPDXREF
/*

// JOB XREFPRNT  X-REF FILE PRINT PROGRAM
// ASSGN SYSØØ4,X'184' UPDATED X-REF FILE
// EXEC XREFPRNT
/*
```

```
// JOB DSORT  SORT INVERTED FILE INPUT DATA

* ***************************************************************
*       SORT INVERTED FILE INPUT DATA - RUN 9
* ***************************************************************
*     1-SAVE TAPE ON SYSØØ7 - UNIT 183 (PRIOR X-REF FILE)
*     2-SAVE TAPE ON SYSØØ8 - UNIT 184 (UPDATED X-REF FILE)
*     3-MOUNT 'UNSORTED IFINPUT' ON SYSØØ5 - UNIT 181
// PAUSE WHEN SET UP COMPLETE, PRESS EOB TO CONTINUE
// ASSGN SYSØØ1,X'18Ø' SORTED IF INPUT
// ASSGN SYSØØ2,X'181' UNSORTED IF INPUT
// ASSGN SYSØ11,X'191'
// VOL SYSØ11,FILEW
// DLAB 'DISK FILE                                        1FDAWRK',      C
               ØØØ1,66ØØ1,66ØØ1,'              ',DA
// XTENT 1,Ø,ØØØØØ1ØØØ,ØØØ199ØØ9,'FDAWRK',SYSØ11
// EXEC DSORT
 SORT FIELDS=(2,71,A),FORMAT=BI,FILES=1,SIZE=15ØØØ
 RECORD TYPE=F,LENGTH=(73,,73)
 INPFIL BLKSIZE=(1825,X),INPUT=T,OPEN=RWD,CLOSE=UNLD
 OUTFIL BLKSIZE=1825,OPEN=RWD,OUTPUT=T
 OPTION LABEL=(U,U)
 END
/&

* ***************************************************************
*       UPDATE INVERTED FILE - RUN 1Ø
* ***************************************************************
*     1-MOUNT PRIOR INVERTED FILE ON SYSØØ6 - UNIT 182
*     2-MOUNT SCRATCH TAPE ON SYSØØ8 - UNIT 184
*     3-CHECK TO SEE THAT'INV FILE DISK' SYSØ14 - UNIT 291 IS READY
// JOB IVUPDT  INVERTED FILE UPDATE PROGRAM
// ASSGN SYSØØ4,X'18Ø' SORTED IF INPUT
// ASSGN SYSØØ6,X'182' PRIOR INVERTED FILE INPUT
// ASSGN SYSØØ8,X'184' UPDATED INVERTED FILE
// ASSGN SYSØ14,X,291' INVERTED FILE DISK
// VOL SYSØ14,SYSØ14
// DLAB 'FDA INVERTED FILE                                 1FDAIVT',      X
               ØØØØ1,68127,6815Ø,'              ',DA
// XTENT 1,Ø,ØØØØØØØØØØ1,ØØØ1Ø1ØØ9,'FDAIVT',SYSØ14
// PAUSE WHEN SET UP COMPLETE, PRESS EOB TO CONTINUE
// EXEC IVUPDT
/*
```

```
// JOB IFPRNT  INVERTED FILE PRINT PROGRAM
// ASSGN SYSØØ9,X'184' UPDATED INVERTED FILE
// EXEC IFPRNT
/*

// JOB IVPRINT  PRINT INVERTED FILE STATISTICS
// ASSGN SYSØØ7,X'184' INVERTED FILE
// EXEC IVPRINT
INVERTED FILE STATISTICS PRINT PROGRAM TITLE
/*

* ********************************
*      MAINTENANCE COMPLETED
* ********************************
*    1-SAVE TAPE ON SYSØØ6 - UNIT 182 (PRIOR INVERTED FILE)
*    2-SAVE TAPE ON SYSØØ8 - UNIT 184 LABEL 'UPDATED INVERTED FILE'
*    3-SAVE DISK ON SYSØ1Ø - UNIT 192 (DICTIONARY FILE)
*    4-SAVE DISK ON SYSØ18 - UNIT 29Ø (X-REF FILE)
*    5-SAVE DISK ON SYSØ14 - UNIT 291 (INVERTED FILE)
*    6-SAVE DATA CELLS SYSØ31 - UNIT 293 (MASTER DOCUMENT FILE)
```

The following programs are for initializing and reorganizing the master file.

```
// JOB DUMPMF  DUMP MASTER FILE
// ASSGN SYSØØ4,X'181' UNSORTED IF INPUT
// ASSGN SYSØØ5,X'184' UNSORTED X-REF INPUT
// ASSGN SYSØØ6,X'183' ID FILE ADDS
// ASSGN SYSØØ7,X'182' TAPE MASTER FILE
// ASSGN SYSØ31,X'293'
// VOL SYSØ31,SYSØ31
// DLAB 'FDA MASTER FILE                              1FDA1Ø5',      X
               ØØØ1,68127,6815Ø,'              ',DA
// XTENT 1,Ø,ØØØØØØ1ØØ,Ø18ØØ94Ø9,'FDA1Ø5',SYSØ31
// EXEC DUMPCELL
/*

// JOB LOADMF  RESTORE MASTER FILE
// ASSGN SYSØØ4,X'182' TAPE MASTER FILE
// ASSGN SYSØ31,X'293'
// VOL SYSØ31,SYSØ31
// DLAB 'FDA MASTER FILE                              1FDA1Ø5',      X
               ØØØ1,68127,6815Ø,'              ',DA
// XTENT 1,Ø,ØØØØØØ1ØØ,Ø18ØØ94Ø9,'FDA1Ø5',SYSØ31
// EXEC LOADCELL
/*
```

```
// JOB INITDC  INITIALIZE DATA CELL
// ASSGN SYSØ18,X'29Ø'
// VOL SYSØ18,SYSØ18
// DLAB 'FDA CROSS REFERENCE FILE                          1FDAXRF',      X
               ØØØ1,68ØØ1,68ØØ1,'                ',DA
// XTENT 1,Ø,ØØØØØØØØ1,ØØØØ41ØØ9,'FDAXRF',SYSØ18
// ASSGN SYSØ31,X'293'
// VOL SYSØ31,SYSØ31
// DLAB 'FDA MASTER FILE                                   1FDA1Ø5',      X
               ØØØ1,68127,6815Ø,'                ',DA
// XTENT 1,Ø,ØØØØØØ1ØØ,Ø18ØØ94Ø9,'FDA1Ø5',SYSØ31
// EXEC INITDC
/*
```

The following is a sample deck set up for the search program.

```
// JOB SEARCH PROGRAM
// ASSGN SYS007,X'183' ID FILE INPUT TAPE
// ASSGN SYS008,X'184' RPG OUTPUT TAPE
// ASSGN SYS010,X'192' DICTIONARY DISK
// VOL SYS010,SYS010
// DLAB 'FDA DICTIONARY FILE                              1FDADCT',      X
               000001,68127,6815000,'              ',DA
// XTENT 1,0,0000000001,000152009,'FDADCT',SYS010
// ASSGN SYS014,X'291' INVERTED FILE DISK
// VOL SYS014,SYS014
// DLAB 'FDA INVERTED FILE                                1FDAIVT',      X
               000001,68127,6815000,'              ',DA
// XTENT 1,0,0000000001,000101009,'FDAIVT',SYS014
// ASSGN SYS018,X'290' X-REF FILE DISK
// VOL SYS018,SYS018
// DLAB 'FDA CROSS REFERENCE FILE                       1FDAXRF',        X
               000001,68001,68001,'            ',DA
// XTENT 1,0,0000000001,0000410009,'FDAXRF,SYS018
// ASSGN SYS020,X'191'
// VOL SYS020,SYS020
// DLAB 'WORK FILE FOR TEXT SEGMENTS                      1FDAWRK',      X
               000001,66001,66001,'            ',DA
// XTENT 1,0,0000100000,0000400009,'FDAWRK',SYS020
// ASSGN SYS031,X'293' MASTER FILE (DATA CELL)
// VOL SYS031,SYS031
// DLAB 'FDA MASTER FILE                                  1FDA105',      X
               000001,68127,6815000,'              ',DA
// XTENT 1,0,0000001000,0180009409,'FDA105',SYS031
// EXEC PHSRCH
        (DATA CARDS GO HERE)
RQ01TITLE
RQ03SEARCH
RQ04PRINT  TERMS=YES
RQ07REQUEST
RQ08
RQ09
RQ10
RQ11
/*
```